

# Castlemaine Naturalist

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Monthly newsletter of the  
Castlemaine Field Naturalists Club Inc.



Salmon Coral Fungus – Firth Park Photo - Noel Young

## The Blight of the Frog

For some years we have been aware of the alarming decline of frogs and the various theories put forward to explain this phenomenon. Finding the cause was difficult. Frog populations would seem to disappear in a short time and it was noticed that this was happening in locations all over the globe, and even in remote mountain tops where there was no apparent human influence. Adult frogs were disappearing in numbers, generally leaving no trace, but as awareness spread, a few dead frogs were found. Strangely, when found freshly dead, there was no visible sign of ill health, or the cause of death.

Biologist Richard Retallick began his academic career as the search for a cause was ramping up, and he spent several years on the project, working in some of the key areas, principally north Queensland and Arizona. His talk at last months meeting explained how the puzzle was solved, and the fascinating methodology used to solve it.

Australia features strongly in frog declines, as does Central America. Research showed that declines seemed to spread geographically in waves. In the north Queensland rainforests, some species have become extinct, and in such high loss areas, the decline in numbers has been massive. Another pattern was noted – frogs in cold mountain environments were dying out readily, but in warmer lowlands the same species tended to survive even if in lower numbers.

Awareness of the problem sparked intensive research, and many possible causes were investigated, including UV, pesticides and other chemicals. In 1998, there were simultaneous discoveries at Washington zoo and the Animal Health Laboratory in Geelong of an organism infecting the outer skin of sick frogs. This was identified as the 'Amphibian Chytrid Fungus' [ACF]. As the name suggests it is unique to amphibians. Its life cycle includes a water-borne phase, after which it attaches to amphibian skin and encysts to produce spores. It was found that the infection prevents breathing through the skin, which can result in the frog having heart failure if the infection is too intense.

Waves of spread of the fungus in Central America were correlated with instant frog declines, proving that the fungus was the cause. Also, ACF thrives in cold conditions and is killed off by heat, which explains the corresponding pattern of frog declines.

Genetic examination of the Amphibian Chytrid fungus from around the world produced only one phenotype, indicating that it was not an evolving resident but had been spread globally from a single source in a relatively short time. The source, from a study of museum specimens, appeared to be South Africa, where the African Clawed Frog seems to have co-existed with ACF for some time.

### The Out of Africa scenario

The African Clawed Frog *Xenopus laevis* (which uniquely seems to be resistant to ACF infection) was found in the 1930's to be a convenient human pregnancy tester. If the urine of a pregnant woman is injected into this frog, it will ovulate. When this was discovered, untold numbers of the species were sent to countries around the world, and bred in labs for use in pregnancy testing until another method took over in the 1950s. Thus it was the ideal vector for ACF to spread globally. Although the 'Out of Africa' theory is not yet universally accepted, Richard is convinced it is correct.

Ending on an optimistic note, Richard referred to the mechanism of adaptation well known in epidemiology, where a new infection spreads rapidly through populations having no resistance with devastating effect, but after a time, the survivors breed with increasing resistance to it. There are signs that many frogs have established survival populations. For example, the Eungella Torrent Frog he studied in north Queensland experienced a population crash in 1985 when ACF arrived. Thought to be extinct, it was rediscovered in 1992, and has small stable populations surviving with the fungus, to which it seems to have developed a resistance.

### **Saving the Corroboree Frog**

One of the species which was decimated by the chytrid fungus is the Southern Corroboree Frog *Pseudophryne corroboree*, a species confined to sphagnum moss bogs in the cold climate of the Snowy Mountains.

In an article in The Age, [May 26 2011] it was stated that fewer than 100 remain in the wild. Listed as critically endangered, it has also suffered from habitat loss, and is currently the subject of breeding programs by Taronga Zoo, Melbourne Zoo, Healesville Sanctuary and the Amphibian Research Centre. At the Melbourne Zoo, \$75,000 is being spent on a climate controlled facility, and 30 eggs have recently been collected from the Mt Kosciuszko area to extend the genetic viability of the program. Again it has been reported that many healthy adults are now carrying the ACF with no apparent ill effects.



Back in the 1970's I was lucky to find and photograph the diminutive but spectacular Southern Corroboree Frog after a relatively brief search of sphagnum moss bogs in the Snowy Mountains. With its glossy black and yellow stripes it resembles a painted plastic toy. Its call though distinctive is not loud. It cannot hop, but crawls, and is 2 to 3 cm. in length.

At that time it was common in its restricted area, but in the late '70s suffered a population crash almost certainly due to ACF. The prolonged drought from the '80s on, compounded the problem by reducing the survival of tadpoles. Species such as this are the first to suffer from global warming.

- Noel Young

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Tony Morton saw this story on the BBC News website and thought you should see it.

**\*\* Cuckoos copy hawks to scare birds \*\***

Cuckoos' hawk-like plumage helps them avoid attacks from birds whose nests they are trying to invade, say scientists.

[http://news.bbc.co.uk/go/em/fr/-/earth/hi/earth\\_news/newsid\\_9458000/9458906.stm](http://news.bbc.co.uk/go/em/fr/-/earth/hi/earth_news/newsid_9458000/9458906.stm)

## The most widespread local plants

Ern Perkins

Over the past few years, 109 quadrats (mostly 20 x 20m) have been selected, and the species occurring within the quadrats have been recorded. The numbers below give the percentage of quadrats for which species have been recorded at least once. Some quadrats have been visited once; others have had several visits. Visits have been in the four seasons.

Wattle Mat-rush ( <i>Lomandra filiformis</i> )	87
Black-anther Flax-lily ( <i>Dianella admixta</i> )	86
Tussock Grass ( <i>Poa sieberiana</i> )	83
Coffee Bush ( <i>Cassinia arcuata</i> )	82
Red-anther Wallaby-grass ( <i>Joycea pallida</i> )	81
Rice-flower ( <i>Pimelea linifolia</i> / <i>Pimelea</i> sp)	80
Twining Fringe-lily ( <i>Thysanotus patersonii</i> )	79
Common Raspwort ( <i>Gonocarpus tetragynus</i> )	76
Chocolate Lily ( <i>Arthropodium strictum</i> )	70
Wallaby Grasses ( <i>Austrodanthonia</i> spp)	70
Daphne Heath ( <i>Brachyloma daphnoides</i> )	70
Red Stringybark ( <i>Eucalyptus macrorhyncha</i> )	70
Purple-leaf Groundsel ( <i>Senecio phelleus</i> )	69
Golden Wattle ( <i>Acacia pycnantha</i> )	68
Red Box ( <i>Eucalyptus polyanthemos</i> )	67
Gold-dust Wattle ( <i>Acacia acinacea</i> )	65
Pink Bells ( <i>Tetratheca ciliata</i> )	62
Many-flowered Mat-rush ( <i>Lomandra multiflora</i> )	61
Honeypots ( <i>Acrotriche serrulata</i> )	60
Long-leaf Box ( <i>Eucalyptus goniocalyx</i> )	57
Shell Grass ( <i>*Briza maxima</i> )	55
Common Hovea ( <i>Hovea heterophylla</i> )	54
Scented Sundew ( <i>Drosera whittakeri</i> )	52
Spreading Wattle ( <i>Acacia genistifolia</i> )	51
Bendigo Wax ( <i>Philotheca verrucosa</i> )	51
Bluebell ( <i>Wahlenbergia stricta</i> )	50
Showy Parrot-pea ( <i>Dillwynia sericea</i> )	48
Waxlip Orchid ( <i>Glossodia major</i> )	48
Grey Everlasting ( <i>Ozothamnus obcordatus</i> )	47
Grey Box ( <i>Eucalyptus microcarpa</i> )	39
Cranberry Heath ( <i>Astroloma humifusum</i> )	39
Downy Grevillea ( <i>Grevillea alpina</i> )	37
Sun Orchids ( <i>Thelymitra</i> spp)	37
Primrose Goodenia ( <i>Goodenia blackiana</i> )	36
Variable Stinkweed ( <i>Opercularia varia</i> )	34
Gorse Bitter-pea ( <i>Daviesia ulicifolia</i> )	32
White Marianth ( <i>Rhytidosporum procumbens</i> )	31

Delicate Hair-grass (* <i>Aira elegantissima</i> )	30
Yam Daisy ( <i>Microseris</i> sp 1)	29
Soft Spear-grass ( <i>Austrostipa mollis</i> )	28
Rough Wattle ( <i>Acacia aspera</i> )	28
Greenhood Orchids ( <i>Pterostylis</i> spp)	28
Box Mistletoe ( <i>Amyema miquelii</i> )	27
Sticky Everlasting ( <i>Xerochrysum viscosum</i> )	26
Variable Sword-sedge ( <i>Lepidosperma laterale</i> )	25
Red-tip Greenhood ( <i>Pterostylis</i> sp aff <i>parviflora</i> )	25
Grass Trigger-plant ( <i>Stylidium armeria</i> )	25
Tall Sundew ( <i>Drosera peltata</i> ssp <i>auriculata</i> )	24
Sweet Bursaria ( <i>Bursaria spinosa</i> ssp <i>spinosa</i> )	22
Field Rush ( <i>Luzula meridionalis</i> )	22
Annual Bluebell ( <i>Wahlenbergia gracilentia</i> )	21
Blue Pincushion ( <i>Brunonia australis</i> )	20
Milkmaids ( <i>Burchardia umbellata</i> )	19
Stinking Pennywort ( <i>Hydrocotyle laxiflora</i> )	19
Stiff Geebung ( <i>Persoonia rigida</i> )	18
Tall Greenhood ( <i>Pterostylis melagramma</i> )	18
Bristly Wallaby-grass ( <i>Austrodanthonia setacea</i> )	17
Spear Grasses ( <i>Austrostipa</i> spp)	17
Midge Orchid ( <i>Corunastylis ciliata</i> )	17
Leopard Orchid ( <i>Diuris pardina</i> )	17
Cat's Ear (* <i>Hypochoeris radicata</i> )	17
Parsons Bands ( <i>Eriochilus cucullatus</i> )	17
Ploughshare Wattle ( <i>Acacia gunnii</i> )	16
Narrow-leaf Bitter-pea ( <i>Daviesia leptophylla</i> )	16
Climbing Sundew ( <i>Drosera macrantha</i> )	16
Red Ironbark ( <i>Eucalyptus tricarpa</i> )	16
Karella ( <i>Gompholobium huegelii</i> )	16
Prickly Guinea-flower ( <i>Hibbertia exutiacies</i> )	16
Common Correa ( <i>Correa reflexa</i> )	15
Common Beard-heath ( <i>Leucopogon virgatus</i> )	15
Magenta Storks-bill ( <i>Pelargonium rodneyanum</i> )	15
Twiggy Bush-pea ( <i>Pultenaea largiflorens</i> )	15
Candles ( <i>Stackhousia monogyna</i> )	15
Hedge Wattle ( <i>Acacia paradoxa</i> )	14
Early Nancy ( <i>Wurmbea dioica</i> )	14
Small Chocolate Lily ( <i>Arthropodium minus</i> )	13
Common Beard-orchid ( <i>Calochilus robertsonii</i> )	13
Sieber Stonecrop ( <i>Crassula sieberiana</i> )	13
Handsome Flat-pea ( <i>Platylobium formosum</i> )	13
Billy Button ( <i>Craspedia variabilis</i> )	12
Rough Bedstraw ( <i>Galium gaudichaudii</i> )	12
Bushy Needlewood ( <i>Hakea decurrens</i> )	10
Purple Coral-pea ( <i>Hardenbergia violacea</i> )	10
Dwarf Greenhood ( <i>Pterostylis nana</i> )	10
Trailing Speedwell ( <i>Veronica plebeia</i> )	10

## Firth Park excursion

Rita Mills

The day was sunny, but cold, and only six people were brave enough to head off south, especially, perhaps, with the build up of more clouds that had the threat of rain. However, it stayed fine, and though we didn't venture far when we got to the Park we found lots of fungi, but, unfortunately, few species. With a season so out of season it's hard to know just what to expect. Other years we have found lots of fungi, including some rare ones, around June or July. Perhaps we were too early. Perhaps we just headed off in the wrong direction, because after the four others had left Noel and I found more, including the very showy Fly Agaric, in a different area.

It seemed to be a good day for the photographers as there were some very attractive species, especially some brick red species growing amongst moss on the base of some of the tall eucalypts near the car park. Most species found were gilled fungi, though we did find some boletes after the others had gone, and there were a couple of jelly fungi, and several coral, or pepper fungi - coral for their looks, pepper for their taste I believe - but I'm not trying them.

All in all, a very pleasant afternoon in the tall forest, but were were very glad to get our hands around a nice hot cuppa when we got back to the cars.

Some Firth Park fungi

- Noel Young



## From the business meeting

### Subscriptions

There are still a number of Outstanding membership fees

Subscriptions unpaid after the next meeting will be assumed to have lapsed, and will no longer receive the Castlemaine Naturalist.

### Meetings to start at 7.30

At the May general meeting a vote was taken in favour of a start time of 7.30 instead of 8pm. Please note the change.

### June 11 excursion = Botanical Gardens

For this time it is planned to combine with the Landcare group for a working bee to reduce weeds in the E C butterfly area. Gloves and stout footwear needed. A mattock or lopper would be good. Meet at cnr Mary st & Froomes rd at 1.30

## Observations

- ◆ Rita Mills again drew our attention to the number of native plants flowering out of season, such as Tall Rice-flower and Common Everlastings on Mt Alexander, and Bursaria flowering at Kaweka.
- ◆ Denis Hurley noted that many small birds like Silvereyes are returning to the area. He also spoke of a small bat taking moths from the window after dusk.
- ◆ Chris Timewell has seen a **Cape Barren Goose** early May at the Castlemaine treatment plant.
- ◆ On April 7, Geoff Harris saw quite a few **Noisy Friarbirds** at Barkers Ck where he has not seen them before. Plus the common presence lately of White naped Honeyeaters and Swift Parrots.  
Rita then commented that Friarbirds used to nest near her home when she was a child, but disappeared after the trees were cut down.
- ◆ Geraldine met a healthy young fox in the yard, and also commented on the Cockatoos doing a great job of trimming the trees along the road, and a Pied Currawong dining on lerps in a tree.
- ◆ Margaret Badminton saw Southern Whitefaces at the Quince Tree, and Colin Turton saw a pair of Deer in the Smiths Reef forest – George Broadway
- ◆ Late May – a pair of Speckled Warblers on the property, and about 15 heads of the *Pterostylis striata* orchid on the Escape Track – Denis

**Disclaimer:** The opinions expressed in this newsletter are those of the contributors and not necessarily those of the club

# Castlemaine Field Naturalists Programme

## June 2011

**Fri June 10 meeting:** speaker NATASHA SCHEDVIN Barking Owls

**Sat June 11 field trip:** Botanical Gardens working bee (see notice p7)

**Fri July 8 meeting:** speaker EUAN MOORE Birding in Sri Lanka

**Sat July 9 field trip:** to be announced

### VISITORS ARE WELCOME AT CLUB ACTIVITIES

**General meetings** - (second Friday of each month, except January) are held in the Uniting Church (UCA) Hall (enter from Lyttleton St.) at 7.30 pm.

**Field Trips** - (Saturday following the general meeting) leave from the car park opposite Castle Motel, Duke Street at 1.30pm sharp unless stated otherwise. BYO morning and/or afternoon tea. Outdoor excursions are likely to be cancelled in extreme weather conditions. There are NO excursions on total fire ban days.

**Business meetings** - fourth Thursday of each month, except December, at Denis Hurley's; 20 Merrifield St., at 7.30 pm. All members are invited to attend.

### Subscriptions for 2011

Ordinary membership: Single \$27, Family \$35

Pensioner or student: Single \$24, Family \$29

Subscription includes postage of the monthly newsletter, Castlemaine Naturalist

### 2011 Committee

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